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Telephony.

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THE THRILL OF DOING A GOOD JOB—DEMAND FOR SMALL PLANTS

There is nothing more satisfying to the normal person than the knowledge of having done a hard job well. The right-minded man takes a pride in his work and knows instinctively when he has done a good job.

These days the efforts that build up revenues and repair the damage wrought by the business recession shine particularly bright. Reports of such results are encouraging, because they show that progress can be made if we only keep on trying.

* * * *

Here's a good example: General Manager E. R. Hannibal of the West Coast Telephone Co. of Everett, Wash., reports that their "business recovery campaign" was a most gratifying success. The organization had set an objective of 1,400 telephone sales, to cut down the loss of 7,643 stations suffered between January 1, 1930, and September 20, 1933.

During the two weeks of the campaign the company recovered 1,674 of the 7,643 telephones—more than 21 per cent. In addition to regaining 1,674 stations, it sold 188 units consisting, for the most part, of service re-grades upward, additional listings, extensions, etc. Four hundred employes made 1,862 sales during the two-weeks period, or 4.65 sales per employe.

"In some companies," says Sales Manager William E. Everett, with pardonable pride, "that would be an excellent average for a whole year."

This experience of the West Coast company shows that telephone employes can sell. In fact, the campaign in Everett aroused the envy of many local merchants —like chain stores—who appreciate efficient sales efforts, and infused new vigor into the commercial life of the community.

The plain fact that at a modest cost for commissions and advertising the telephone company gained new business equal to that of several of its exchanges shows that it pays to give thought and energy to sales campaigns to regain the stations lost in the last four years. "Business Recovery" campaigns that live up to their name are good investments for all telephone companies.

* * * *

The facts show that telephone companies have made a better record during the economic tailspin than most other lines of industry. Although beset by all the handicaps that have impeded all business—and by many other difficulties peculiar to utilities, such as political attacks in the form of rate agitations — telephone companies have carried on, striving to give good service.

If there is one thing they need to be spurred up about, it is the vital necessity to keep up their maintenance work. Many companies have undoubtedly been remiss in this respect because hard times, naturally enough, have made them cautious about expenses. They have postponed too long the purchase of supplies and equipment to keep their plants in the best condition.

Such companies should remember the maintenance reserves they have collected from their ratepayers, and devote them to buying needed materials. This matter has been urged at several telephone conventions in the past year, and needs special emphasis at this time.

Send in your order for telephone supplies, and thereby help the manufacturers and protect your property at the same time.

Skilled Workers.

The November issue of "Nation's Business" contains an article "The Bull Market in Skilled Workers," by Kenneth Coolbaugh, of the Pennsylvania Department of Labor and Industry. Mr. Coolbaugh states that, in his opinion, we are headed toward the most drastic shortage of skilled labor in our history.

For four years, American industry has not taught skill to men of all ages; that is, there has been little done in training youth in tasks requiring skill. Employers have been too busy trying to keep the men they had to pay new workers for the privilege of teaching them to be useful.

These skilled workers of other days—the journeyman machinist, millwright, metal worker, upholsterer, moulder, blacksmith —when unemployment came to them, moved to other locations or entered into other work. They have not waited for their particular company or business to call them back to work. They looked around, surveyed conditions. They counted up their various talents to see where they could fit

into conditions, and then they started in a new line of endeavor. Many of these workers are well satisfied with their new situations, all things considered, and have no desire to return to the old occupations.

Analyzing the conditions and situation, Mr. Coolbaugh's conclusion is that skilled men are at a premium today. "The able-bodied worker," says he, "who today totes skill or the will to acquire skill, is once again or soon will be sitting at the top of the world."

In the Telephone Field.

In view of the telephone industry being, as frequently stated, a specialized industry, these remarks of Mr. Coolbaugh are most interesting. They indicate the foresightedness of the industry in making every effort to retain in employment during the difficult period through which we are passing, as large a staff of workers as possible.

It also brings to mind again most forcibly that the telephone business is a cooperative industry and an interdependent industry. An employe of an operating company securing one new subscriber helps not only his employer and the telephone manufacturing company, but himself as well.

COMING CONVENTIONS

Nebraska Telephone Association, Hotel Paxton, Omaha, February 13 and 14, 1934.

Iowa Independent Telephone Association, Hotel Fort Des Moines, Des Moines, February 21 and 22.

Oklahoma Utilities Association, Hotel Mayo, Tulsa, March 6 and 7.

What hurts the large company, eventually will harm the small company and its employes. The well-known slogan of The Three Musketeers—"One for all and all for one"—applies particularly to the telephone business. Think it over!

Demand for Small Plants.

An interesting development in the telephone field of late has been the growing desire of experienced telephone workers to get into the business as manager-owners. Within the last year there has been an increasing desire to buy small exchanges on the part of individuals who, for various reasons, wish to acquire a plant.

In some cases the depression had forced a cut in their salaries, or a doubling-up of work, or even a loss of the job altogether. These conditions affected men who had been in the telephone business many years and were qualified to operate a plant of their own.

They are showing their faith in the business by seeking a chance to invest their savings, and have sent inquiries to TELEPHONY asking for information about exchanges that may be purchased.

Syndicate companies that found it necessary to retrench, have dismissed or retired experienced workers who are anxious to get back into the business on their own hook.

Where such workers can command the necessary capital, the opportunity is presented for syndicate of holding organization receivers to reduce liabilities by transferring certain units of the systems to such employes, and thereby also provide the men with a chance to establish their own enterprises. Under favorable conditions, this solves the problem for both parties to the transaction.

This demand for small properties on the part of telephone workers who have been subjected to too many "adjustments" because of the depression, furnishes proof of their faith in the telephone business.

Teletype Printing Telegraph Systems

A Brief Description of Printing Telegraph Equipment and Its Many Applications—Development of Printing Telegraph—Types of Sending and Receiving Sets—Systems in Operation—Applications and Method of Operation—Part I

By A. S. Benjamin.
Sales Engineer, Teletype Corp.

Communication, the transmission of intelligence from one point to another, was one of the first problems which confronted man. The first means of communication was no doubt in the forms of direct conversation in a very primitive language, and gestures; conversation being used for short distances and gestures for somewhat greater distances.

When men became so widely separated that the human voice could not bridge the gap and the gestures were no longer discernible to the intended recipient of the message, signals produced by fire, smoke, drums, whistles and the wigwagging of objects, were used.

As civilization advanced and men became more widely separated, communication was carried on through messages transmitted by messengers—the pony express, and the stage coach, which eventually developed into the postal systems now found in every civilized country. Today such messages are quickly transported by railroad, steamship and airplanes.

The introduction of the electrical transmission of intelligence changed the entire communication art. When Samuel F. B. Morse conceived the first practical electrical telegraph in 1832, R. E. House the first practical printing telegraph system in 1846, and Alexander Graham Bell the first practical telephone in 1876, little did they realize the importance of their contributions to the development of electrical communication.

Electromagnetic telegraph, printing telegraph and telephone systems are so highly developed today that it is possible at the present time to exchange messages between almost any two points in the world within a few minutes' time. In the United States alone, 1,000,000 telegrams and 75,000,000 telephone calls are handled by the communication companies daily. This does not include the thousands of stock quotations, press and private messages which pass over electrical communication networks covering the entire country.

In less than a century we have seen the phenomenal growth of such communication systems as the Morse telegraph; the printing telegraph, especially Teletype systems; the telephone; telautograph; and the introduction of telephoto, with the beginnings of television. Most of the systems have been operated over both wire and radio channels.

A printing telegraph system is an electrical communication system on which the message is automatically recorded in typewritten form. The first practical system of this kind was conceived in 1846 by R. E. House and was put into actual operation between New York City and Philadelphia in 1849.

In 1856, David E. Hughes, with the assistance of George M. Phelps, introduced a more improved system, which was operated between Worcester and Springfield, Mass. Although the Hughes-Phelps equipment resembled that used by House, it was based on a different principle and was found to be far superior to

and eventually replaced the older system.

Fig. 1, reproduced by permission of the Scientific American, illustrates the Hughes printing telegraph apparatus. It is to be noted that the messages are transmitted from a piano-like keyboard and printed on a tape from a typewheel. The sets were originally driven by weights but were later equipped with electric motors. The Hughes printing telegraph system was followed by a number of others, the more important ones being Baudot, Siemens, Creed, Murray, Barclay, Rowland, Potts, Cardwell, Morkrum, Kleinschmidt and Western Electric. Several of these systems are no longer in use.

There are three general classes of printing telegraph systems—"step-by-step," "start-stop," and continuous synchronism. The terms used to designate them apply to the method used in keeping the machines at the various stations properly synchronized so that the transmitted impulses may be properly received and recorded on the receiving machines

In "step-by-step" systems, the transmitted impulses usually operate a magnet which moves a typewheel to a position corresponding to the character to be printed. The number of impulses required varies with the character and the sequence in which it is printed. These systems are comparatively slow and are little used at the present time.

"Start-stop" systems, which are the most commonly used, have a selective "code" which has the same number of elements for each character. A start pulse initiates the transmission of the selecting impulses which is followed by a stop pulse; that is, the transmitting and receiving mechanisms, which are running at practically the same speed, are started and stopped for each character.

Continuous synchronism systems utilize special speed control mechanisms to maintain the proper syncronism between terminals. The selecting code used in "start-stop" systems (without the "start" and "stop" impulses) is used on the continuous synchronism systems.

This paper particularly covers Teletype systems, Teletype being the trade name for the most modern and widely-used printing telegraph systems. More than 70,000 Teletype recording sets, not including thousands of auxiliary units used in connection with this equipment, are in operation today. This apparatus is used by the various communication companies under several names such as the Teletype, teletypewriter, typing telegraph, Morkrum, and simplex printer, and handles the larger part of the world's commercial and private telegraph business.

Fig. 1. The Hughes Printing Telegraph Set.

Printing telegraph equipment up to 1922 was practically confined to the commercial telegraph and railroad companies and it was not until 1922, when the Morkrum Co. introduced the model 12 page Teletype set, that printing telegraph equipment was considered for general business use. This unit is a comparatively simple one, inexpensive as to initial and maintenance costs when compared to other systems then available.

The demand for printing telegraph equipment was further increased in 1925 when the Morkrum Co. introduced the model 14 tape Teletype unit, Fig. 2, which included still further refinements in the printing telegraph art.

In 1930 Teletype Corp. went into the production of model 15 page Teletype equipment, Fig. 3. This represents the latest development in page-recording printing telegraph apparatus and supersedes the model 12 sets.

Teletype may be best described as a distantly - controlled typewriter. The unit which transmits or prepares the message for transmission has a bank of keys which resembles and is operated like the one on a typewriter. The recording unit has a platen which carries the paper and typebars — in some cases a typewheel—which are automatically selected and thrown against the paper to print the desired character.

The most commonly-used and simplest form of Teletype unit is the model 14 direct keyboard tape recording "start-stop" set, shown in Fig. 2. On this instrument, the depression of a key first sets up a code combination corresponding to the characters to be printed or the function to be performed, and then disengages a clutch which connects a motor to a mechanism that transmits the code combination in the form of electrical impulses to all of the machines connected to the sending instrument.

These electrical impulses actuate magnets on all of the machines on the circuit including the sending instrument and, through certain mechanisms, select a particular typebar and causes the proper character to be printed on a narrow tape which is automatically spaced after each character.

The most commonly-used code is known

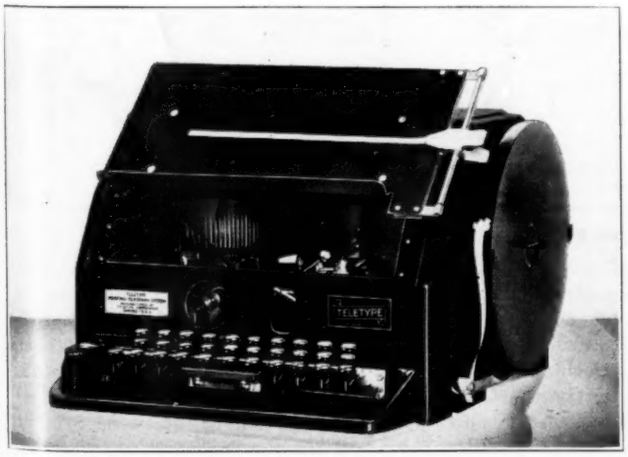


Fig. 2. Model 14 Direct-Sending Tape Teletype Set—Fig. 3. Model 15 Direct-Sending Page Teletype Set.

as the five-unit Baudot code, Fig. 4. The combination for each character or function consists of five elements of time, during any of which we may have either of two conditions: in the case of the simplest circuit, current or no current, referred to as marking and spacing impulses.

The five-unit code gives 32 different combinations. On the tape-recording Teletype set, three of these combinations are used for the shift, release, and space functions, leaving 29 for the characters.

The printer is arranged so that the paper can be placed in an upper or lower case position with respect to the type pallets, thus making possible the printing of 58 different characters. When the shift combination is transmitted, the paper is placed in position to print the upper case characters and the release combination places it in position to print lower case characters.

A bell is also provided on the receiving units and is usually operated on the shifted position of the "J" or "S" combination. This bell is used for attracting the attention of the attendant at the receiving end of the circuit and for sending routine signals.

In some cases, the five-unit code does not provide a sufficient number of combinations for the required service. For example, the Japanese and Russian alphabets require more than 32 combinations. In this case a six-unit code is used which gives 64 combinations and, assuming that three of them are required for functions, 61 will be available for the printing of characters which will give a possible total of 122 characters.

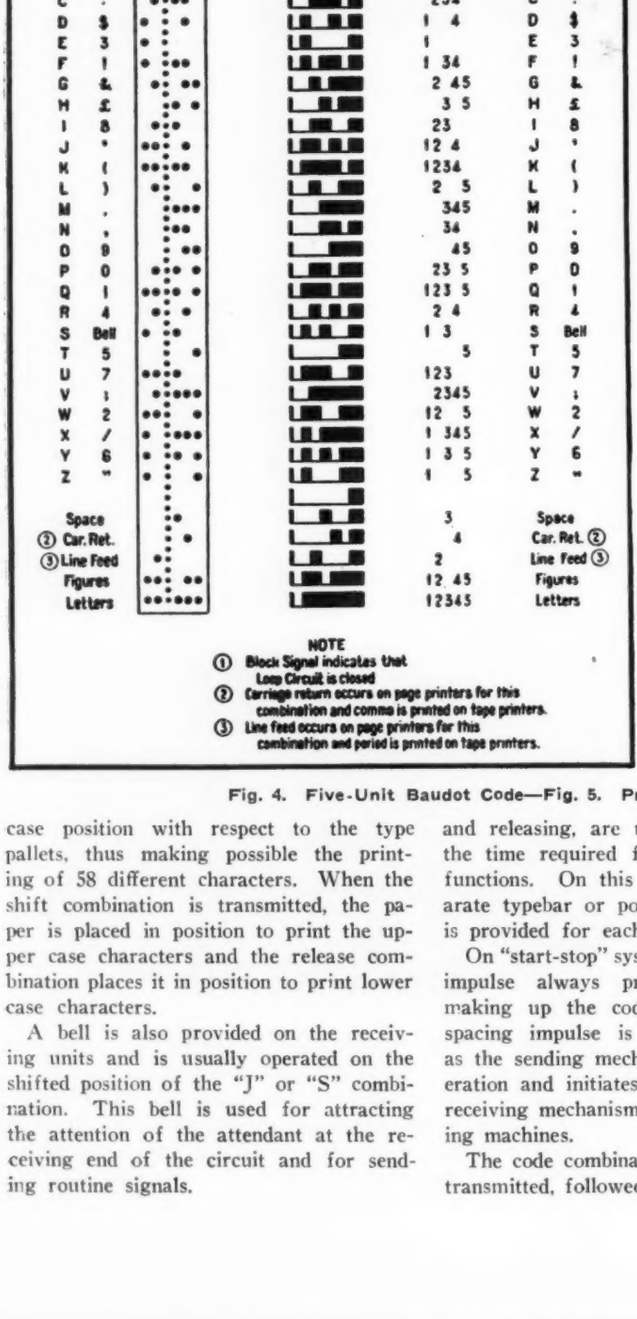
An extremely high speed of operation is required on stock quotation circuits. Six-unit printers, making possible the printing of 64 characters without shifting and releasing, are used, thus eliminating the time required for sending these two functions. On this type of unit, a separate typebar or position on a typewheel is provided for each character.

On "start-stop" systems, a spacing (start) impulse always precedes the impulses making up the code combination. This spacing impulse is transmitted as soon as the sending mechanism is put into operation and initiates the operation of the receiving mechanism on all of the receiving machines.

The code combination impulses are then transmitted, followed by a marking (stop) impulse. The receiving mechanisms are stopped at the end of each cycle and are again started when the next start impulse is transmitted.

All machines on a circuit must operate at substantially the same speed in order that the sending and receiving mechanisms will always be in the same relative position. The motors which drive the Teletypes are equipped with governors which keep the speed of the motors within the required limits. When closely-regulated, alternating current power is available, synchronous motors may be used.

Teletype sets are also available in di-



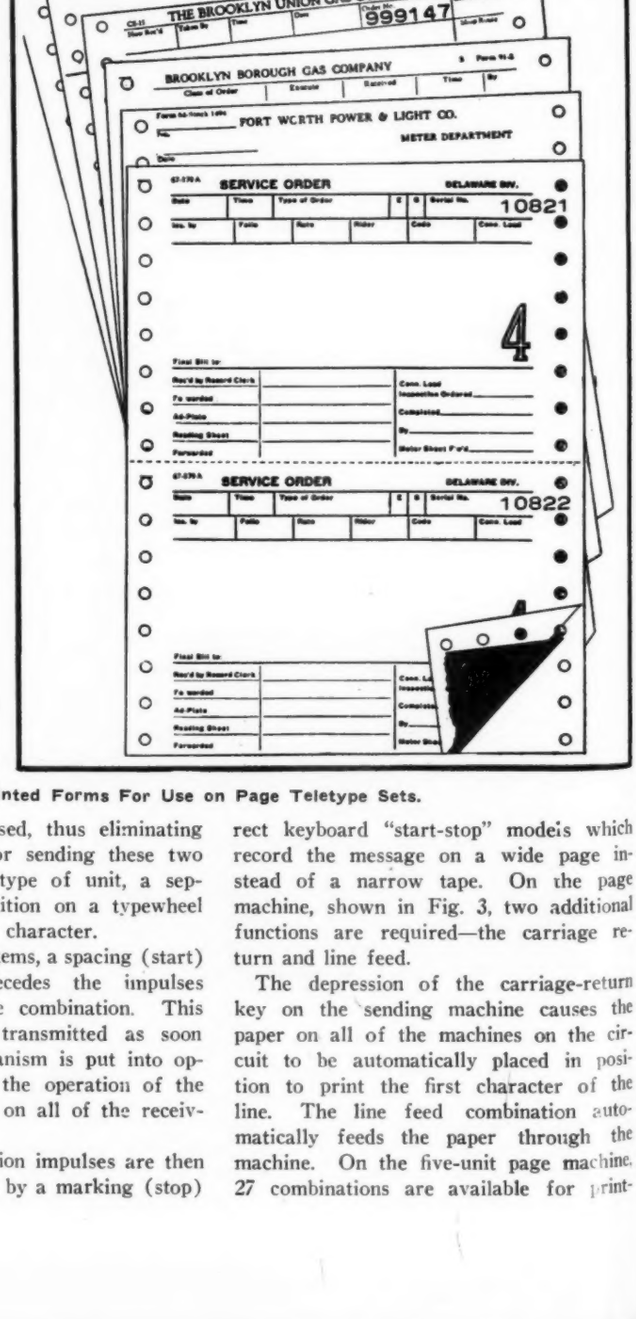


Fig. 4. Five-Unit Baudot Code—Fig. 5. Printed Forms For Use on Page Teletype Sets.

rect keyboard "start-stop" models which record the message on a wide page instead of a narrow tape. On the page machine, shown in Fig. 3, two additional functions are required—the carriage return and line feed.

The depression of the carriage-return key on the sending machine causes the paper on all of the machines on the circuit to be automatically placed in position to print the first character of the line. The line feed combination automatically feeds the paper through the machine. On the five-unit page machine, 27 combinations are available for print-

ing, thus permitting the printing of 54 characters if desired.

The paper on the tape and page machines is usually in rolls and is automatically fed through the printer, thus making possible the recording of a message without an attendant at the receiving end of the circuit. Carbon copies can be made if required on both the tape and page machines.

The page Teletype printing unit has been adapted to handle printed forms. The stationery, Fig. 5, is made continuous with holes along its edges and the printer platen rolls are equipped with pins which engage the holes in the forms. This arrangement prevents slippage of the paper and insures perfect registration of forms.

As many as seven copies can be made at one time; if more than seven are required, several machines can be connected in series, or recording ribbons used on the Teletypes, and the required number of copies run off on a duplicating machine.

The tape-recording Teletype set is applicable to installations where the messages are of a transitory nature, where it is not essential that the message be in a page form, or where it is economically feasible to paste the message on message blanks. The tape instrument is particularly adapted to general commercial telegraph, stock quotation, broker, hotel, bank and fire alarm services.

Since the tape machine uses a small paper carriage and does not require the carriage-return and line-feed functions and its associated mechanisms, that instrument requires less parts and has a lower initial and maintenance cost than the page machine.

When printing telegraph equipment was first developed for commercial telegraph use in the United States, it was thought that a printer which would record the messages directly on a wide page would provide the fastest and most economical way of handling the traffic. Page recorders were, therefore, adopted by the commercial telegraph and railroad companies and were used until the telegraph business increased to such a point that the existing wire facilities could not handle the traffic.

An analysis of the situation showed that it would be possible to increase the capacity of the wire facilities by using tape-recording machines, the increased capacity being due to saving in line time brought about by the elimination of the carriage-return and line-feed signals and the fact that it is unnecessary to completely re-run messages containing errors.

When an error is made on a tape recorder, it may be corrected by merely transmitting the corrected portion of the message, which is then pasted over the section containing the error.

Although printing telegraph apparatus automatically records the message, the telegraph companies maintain operators on the receiving side of their circuits in order to carefully check the message and pass it through for delivery. It was found that the receiving operators, in addition to checking the messages, could also paste the tape to the message blank without any increase in personnel or in the amount of time for handling the message.

The commercial telegraph companies, therefore, went from page recording to tape recording, obtaining approximately 20 per cent increase in the capacity of their circuits and a decrease in the initial investment and maintenance cost on the apparatus required.

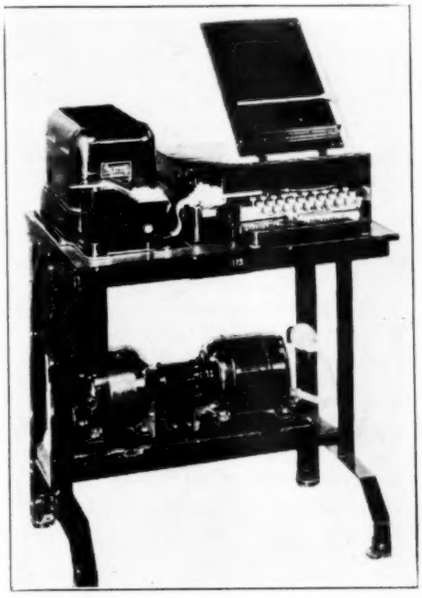


Fig. 6. Teletype Tape Perforator Sending Set.

The page-recording machine is particularly adapted to general business needs, since the message is ready for delivery as soon as it is recorded and thus eliminates the additional operation of gumming the tape onto message blanks. Multi-copies on plain paper and printed forms can be made on the page machines which cannot be produced on the tape printer.

The convenience and decreased cost of handling general business messages on page machines in many cases offset the slightly higher initial and maintenance cost of the page machine over that of the tape instrument.

There are two general methods of printing telegraph transmission—the direct sending keyboard previously described, and the perforated tape.

The depression of a key on the direct-sending keyboard immediately sends the code impulses over the line. The direct sending keyboard is usually combined with a recording unit to form a combination sending-receiving set. When the keyboard is manipulated, a record of the transmitted message is made on the recording unit of the sending machine as well as on all other recording units of the circuit.

The perforated tape (see Fig. 4) is prepared on a perforator unit controlled by a bank of keys similar to that on the direct-sending keyboard. The perforator keys control six (seven in the case of six-unit printers) punches which perforate a vertical row of holes in the tape, five of which punch the code combinations and the sixth a hole for feeding the tape.

Holes are perforated for the marking impulses of the code combination; no holes are perforated in the positions corresponding to the spacing impulses. The perforated tape is then passed over pins in a tape transmitter, Fig. 6, which sends the impulses out over the line and operates all recording machines, either tape or page type, that might be connected to the circuit.

In many cases the perforated tape is a sufficient record of the transmitted message and no printed record is made at the sending point.

The maximum speed of the direct sending keyboard is fixed at approximately 60 words a minute with an average operating speed of approximately 45 words a minute. As soon as a key is depressed the impulses are sent over the line and the characters are immediately recorded.

It is not possible to make a correction in the message without having it appear in the copy. A correction can be made on direct keyboard page machines if the error is observed before the line-feed signal is transmitted by returning the carriage and then spacing until the error is reached and the incorrect portion x'd out.

On tape recording units, corrections are usually made by printing a series of x's followed by the last correctly-printed word and the corrected message.

In the case of tape transmission, the speed of the tape transmitter is fixed at the maximum speed of the circuit, usually 60 words a minute. The perforator may be operated at extremely high speeds. The operator punches the tape at an average speed greater than that of the circuit, thus permitting the tape to accumulate ahead of the transmitter and to pass through it at the maximum uniform speed of 60 words a minute.

If a tape is incorrectly punched, a correction may be made in the tape if the error is discovered before the tape passes through the transmitter. The correction is made by backing the tape through the perforator and then perforating the release combination (all marking impulses) which obliterates any combination which might have been previously punched.

When this portion of the tape passes through the transmitter, the release combination will be transmitted and that function operated without any evidence of printing or spacing. If the printer is in the upper case position when the error is made, it will, of course, be necessary to follow the release combination by the shift combination before proceeding to perforate the corrected message.

Another Teletype unit finding extensive use at the present time is the reperforator. In many cases it is necessary to physically relay messages from one circuit to another due to differences in the kind of systems or operating speeds of the circuits. Reperforators, which are in reality distantly-controlled perforators, are used at these relay points.

They operate very much like the printer recording unit, except that a vertical row of holes is perforated in a tape instead of the printing of a character or the performance of a function. The tape thus prepared can then be run through any tape transmitter.

Reperforators may be operated in conjunction with printer machines, in which case a printed copy and perforated type are simultaneously prepared.

On continuous synchronism systems, the transmitting and receiving apparatus is connected to auxiliary equipment which maintains the synchronism of the two ends of the circuit and also controls the transmission and reception of the line impulses.

At the present time all continuous synchronism systems are arranged for multiplex operation; that is, the auxiliary equipment is arranged to give from two to four transmission channels in each direction over a single wire. This is accomplished by successively transmitting the impulses from each of the sending machines.

On a four-channel system, the five impulses of the first machine are transmitted and received at the other end of the circuit. The five impulses from the second machine are then transmitted, followed by the impulses of the third and fourth machines. Tape transmission is used in connection with multiplex circuits.

Multiplex systems are not as flexible, and are more expensive than the "start-stop" systems. They are, therefore, confined to installations involving widely-separated points which have a large exchange of messages. (*To be concluded.*)

What Operators Want to Know

Questions Pertaining to the Handling of Certain Conditions in Connection With Collect Toll Calls Originating at Pay Stations—Supervisors' Procedure in Handling Such Calls—No. 128

By Mrs. Mayme Workman,
Traffic Supervisor, The Illinois Telephone Association, Springfield, Ill.

Two questions are asked this week pertaining to collect calls originating at a pay station. Question No. 2 asks: "Should a ticket be filed as a cancelled call on a collect call from a pay station if the party called refuses the charges and the calling party has no money to pay for the call?" The answer to this question is, "Yes."

In a case of this kind, the call should be referred to the supervisor. She will write "shortage (amount)" in green diagonally across the face of the ticket and enter on the back of the ticket the reason why the charge was not collected, followed by her personal number. The amount of the report charge is entered in the report space, and the ticket is referred to the chief operator. She will refer the case to the employe locally designated to handle such a case.

Some companies have regular forms for use in cases where there is a shortage or overcollection. One form is sent to the commercial representative and one to the accounting department.

Question No. 3 asks: "How should you handle a long distance call from a pay station when the party refuses to pay a report?" If the calling party refuses to deposit the amount of the report charge, connect him with your supervisor. She will determine the facts by examining the ticket and questioning the operator and, if necessary, the calling party.

If the supervisor finds that the charge for the report is correct, she will inform the calling party that the amount requested is correct. She will also tell the calling party that the report charge will be credited toward the message charge if the call is completed later and try to secure the deposit.

If the supervisor is unable to secure the deposit and the calling party is still holding the line, she will connect him with the employe locally designated to handle such a case.

If the calling party asks that another attempt be made to complete a call on which he has refused to deposit the report charge, the supervisor will explain that she is not permitted to take further action until the report charge has been deposited. If the deposit is not secured, the supervisor will instruct the operator to make no further attempts on the call.

Questions from Illinois Operators.

1. If your town does not have a messenger service, can a subscriber compel that service in any form?
2. On a collect call from a pay station, if the called party refuses the charges and the calling party has no money to pay for the call, should the ticket be filed as a cancelled call?
3. How should you handle a long distance call from a pay station when the party refuses to pay a report?
4. How many times shall we ring a number before we say, "I am sorry; they do not answer?"
5. If a number in a neighboring town is "by" and you can get it within a few minutes, is it necessary to tell the calling party the line is busy or just wait a few minutes?

For answers to these questions from real Illinois operators, please turn to page 26.

New York Telephone Co. Reports Station Loss in November.

The New York Telephone Co. reports a net loss of 1,341 stations in November. In October, the company gained 1,899 stations, while for November, 1932, there was a loss of 14,519.

For the first 11 months of this year the net loss in installations was 16,716, compared with a loss of 228,853 stations in the corresponding period of last year. The company does about one-fifth of the total Bell System business.

SELLING THE SERVICE

By John G. Reynolds.

1. When all telephone employers learn to recognize every sales opportunity; to realize that prospects for telephone service can be found everywhere; and that all they need to do to make sales is to analyze each sales opportunity, and then point out to the prospect a few good reasons why he needs telephone service—we can then throw away our red ink and start using our black ink again.

2. When a subscriber makes a request for a louder ringing bell, investigate the situation. Suggest an extension. By doing this you'll not only increase your company's revenue but also give your subscriber a convenient service that he will appreciate.

3. During the past few months many companies have reduced the installation charge on handsets. If your company is among those making this reduction, get out your old lists of prospects. Obtain from them the names of prospects for handsets, who refused to buy because of the high installation charges. See these prospects at once. The change in rates may help you to sell them.

4. Successful salesmen realize that to sell any commodity they must first sell their own personality. In this way a strong business connection between the buyer and the salesman is often built up. As a result the buyer has confidence in the salesman and in his products. How about it, telephone salesmen, is your personality aiding you in making sales?

5. Theodore Roosevelt once said: "Every man owes some of his time to the upbuilding of the profession to which he belongs." Telephone employes, who are stubbornly refusing to spend time trying to make sales because they are not paid for doing it, should think the statement over carefully, and then change their attitude.

Bell Arguments in Massachusetts Case

"No Case Against Company" Declares General Attorney of the New England Telephone & Telegraph Co.—Closing Argument in Massachusetts Rate Case Defends Its Policies in Plant Development, Rate Making and Management

Asserting that the advocates of a rate reduction had made out no case, despite nearly three years of hearings before the Massachusetts Department of Public Utilities, George R. Grant, general attorney of the New England Telephone & Telegraph Co., began his oral argument on November 22 at Boston in defense of the existing rates and managerial policies of this utility.

Wyckliffe C. Marshall, counsel for the Boston Central Labor Union, main petitioners against the company, occupied most of the day with his argument, after which Mr. Grant was directed by the commission to proceed for the remaining half hour. Adjournment was then taken to November 29 to allow Mr. Grant to finish, thus closing the proceedings before the board. An account of Mr. Marshall's argument was published in TELEPHONY on December 2.

The complaint in this case, dated Novemeber 13, 1930, Mr. Grant said, relates both to telephone service and charges for it. It alleges that the charges are unduly discriminatory, unjust and unreasonable. It does not allege, nor has Mr. Marshall undertaken to prove, what rates in the company's schedule are in error, nor the extent of such error. There has been no proof that the services rendered by the company are at fault or that the rates are in any way illegal.

The company submitted its evidence in seven days after waiting almost three years for some evidence tending to substantiate the petitioners' position, Mr. Grant stated.

Burden of Proof With Complainant.

That the burden of proof rests with the complainant is undeniably true, Mr. Grant said. Regulatory authorities and the courts of many states have passed upon this. Without exception they have held that the burden to prove existing rates unjust rests with the petitioner for a modification, and further, that he must show that the result of changing the schedule will not deprive the company of the revenue to which it is reasonably entitled by law.

The petitioners in this case, the company's attorney declared, have not only failed to show that their proposals will not deprive the company of its legally-entitled revenue, but have admitted that these proposals will reduce the company's revenue between $8,000,000 and $10,000,000 a year at a time when it is already operating at less than the cost of rendering the service.

The regulatory authorities and the courts have further held that a commission order reducing rates is void unless the record contains substantial evidence warranting such reduction, and that existing rates which have had commission approval, are presumed to be just, fair and reasonable. The rates involved were approved by an order of the Massachusetts commission dated July 30, 1925, except those rates in the schedule which show reductions.

By statute in most states, including Massachusetts, the burden of proof to show that higher rates are necessary to obtain a reasonable compensation for the service rendered, is placed upon the utility. The absence of any statutory language in any of the jurisdictions, directly or indirectly placing the burden of proof upon the utility to show that existing rates are proper, lends further weight to the argument that he who complains must produce the proof of his contention.

It has always been clearly the intention of the various legislatures in the exercise of their police powers over rates, to require the utility to justify affirmatively the necessity for increased tariffs. Had there been any such intention with respect to the question of the reasonableness of the existing rates, the statutes would have declared it.

Complainants Failed to Sustain Position.

Mr. Grant averred that in all these protracted proceedings there has been no competent testimony to substantiate the allegations of the complainants; that the facts and figures supplied by the company at Mr. Marshall's request and submitted by him in exhibit form, do not in any way indicate that the rates of this company are illegal or should be changed; that competent conclusions can be drawn from such facts only by a competent witness, and that nothing in Mr. Marshall's stated qualifications indicates in the least degree that he has had any experience in the telephone business or knows the first thing about telephone rates.

"He has told us," said Mr. Grant, "that soon after he left college he worked for four months for the Western Electric Co. He has admitted that he has had no acquaintance with telephone service or rates other than in an academic way through reading. The type of his study of operating problems he has indicated by some of his exhibits and references to articles taken from newspapers and other unknown persons, whom we have not had the opportunity to cross-examine, and much of whose dissertation has been of the academic variety and utterly lacking in the essentials of competent proof."

Experiment in Rate Regulation.

"Mr. Marshall's grotesque and fantastic ideas about telephone rates have been repudiated by commissions, and some of them have been rejected by the very public which he now professes to serve," said the speaker. "He has compared this method of trying this case to an experiment in chemistry or physics . . . It is quite probable that the users of business telephone service in this commonwealth, whose rates Mr. Marshall seeks to increase (as in the record), would loudly protest if this experiment should succeed.

"In a long list of commission and court decisions are cases which hold that not only must the complainant carry the burden of proof that the existing rates are unreasonable and unlawful, but that he must also show the effect of any proposed decreases upon the ability of the utility to earn a fair return.

Manifestly, Mr. Marshall did not and could not make such a showing; first, because he has proposed no specific decreases; and second, because he has presented to this commission no study of the concrete results upon the company's revenue and expenses of changes in rates, either general or specific. He has *guessed* that his plan (Marshall's proposed promotional rate schedule) will cost the company eight or ten million dollars a year."

Exhibits of Petitioner Show Confusion.

Time after time throughout these hearings, Mr. Grant asserted, Mr. Marshall has refused to take a position one way or the other as to the meaning of his exhibits or their purpose in his scheme. More than 90 times he postponed such action. On many different pages of the record appears evidence that the commissioners sitting in the case were much puzzled concerning the object of these exhibits.

The commission not infrequently inquired of Mr. Marshall as to how and when he would connect up his exhibits with some definite idea pertaining to his proposed rate reduction. Mr. Marshall stated that the company might develop his conclusions by cross-examination, but the company did not do this, Mr. Grant said, as it was Mr. Marshall's duty to develop his case.

"On the other hand," said Mr. Grant, "the uncontradicted testimony of the company's witnesses indicates conclusively that Mr. Marshall's exhibits have been inaccurately and carelessly made, improperly used, and contain errors to the extent of millions of dollars."

License Agreement Value Unshaken.

An example of the extravagance of expression indulged in by Mr. Marshall appears in connection with the license payment to the A. T. & T. Co. He had said that he intended to argue that if the Amer-

ican company charged any sizeable license fee at this time, it amounts to "milking" the New England company. Commissioner Webber pointed out that any possible saving in this respect would be inconsequential, whereupon Mr. Marshall said that he was not intending to put a great amount of time on this.

The part he had been hammering, he said, and the place where he had been looking for information, has been the machine-switching development, because millions of dollars are there involved. After this he devoted many pages to the license contract. His conclusion upon this was that the New England company should not pay more than $250,000 a year for the A. T. & T. Co. services, although this figure was unsubstantiated by any study or the use of any figures.

When Mr. Marshall undertook to show the loss occasioned by the use of machine-switching equipment, he contented himself with an endeavor to prove that this was $800,000 a year rather than millions. Chief Engineer Manson, on the contrary, proved without contradiction that dial operation has resulted in direct saving rather than loss.

No Correlation in Marshall Exhibits.

Mr. Grant cited 30 exhibits which indicate the confusion and lack of correlation in Mr. Marshall's procedure, pointing out that these "hopelessly mix up such matters as the (telephone) report of the Massachusetts Highway Commission, local toll rates, list of Boston zones, main station data, other Boston zone information, P. B. X. rates, lists of definitions, P. B. X. data, (Massachusetts) Senate documents, conditions governing service, data for service outside Boston, more main station data, service in Boston, more P. B. X. rate information, fixed capital, franchise requirements, salaries, public telephones and taxes. This material refers to a period which is too long in the past to serve any useful purpose in this rate case."

Abstract information on these various subjects, without any attempt to fit the facts together, the company asserted, in order to arrive at some conclusion relative to the reasonableness of the telephone rates or the quality of service rendered, in no way entitles Mr. Marshall to argue that he has sustained the burden of proof.

"The fact is," said Mr. Grant, "this mass of disjointed, irrelevant and unrelated statements may be used in argument just as well to maintain the position of the company as to assist Mr. Marshall in arriving at any conclusion favorable to the position he has taken in the case.

In other words, the data supplied by the company at various times during the past three years and at considerable effort and cost, in the form presented by Mr. Marshall can be of no possible service to this commission in its analysis of the problem here presented."

Mr. Grant resumed his argument on November 29 with an outline of the major features of the case as brought up by Mr. Marshall. These covered (1) alleged overbuilding of plant; (2) machine switching vs. manual operation; (3) contractural relations with the A. T. & T. Co.; (4) depreciation expense; and (5) measured rates for all telephone service. In a broad way he treated these subjects, first commenting on the financial status of the company in relation to return, rates, etc., in part as follows:

High Spots of Case Summarized.

The company's present plight by reason of inadequate revenues is a fact beyond dispute. F. E. Moore, general auditor, testified that from 1924 to 1933 the par value of the company's stock increased from $83,025,400 to $133,345,800 through stock issues at par for cash for $49,773,800 and stock at par for other companies' securities amounting to $546,600.

Further facts brought out by Mr. Moore's testimony are: The A. T. & T. Co. and the general public own the stock of the New England company in the proportion of 65 to 35 per cent, the latter being owned by 13,457 shareholders with average holdings of 35 shares each. From 1924 to the beginning of 1933 the dividend rate was maintained at 8 per cent per annum except in 1925, when reductions in two of the quarterly payments cut the rate for the year to 6 per cent.

Upon numerous occasions in 1931 the company's stock sold below par on the Boston Stock Exchange. From April 6, 1932 to August 23 of that year it was continuously below par. On September 27 and 28 it went below, and from October 4 continuously to the present time it has sold under par except for a few days last July. These under-par quotations persisted even under the stimulus of an 8 per cent dividend.

From 1925 to 1932, the company's funded debt increased from $46,820,000 to $77,820,000 as the result of an issue of mortgage bonds in May, 1926, of $40,000,000 and a mortgage note on real estate in March, 1929, of $2,000,000, retirement of $1,000,000 debenture notes in 1930 and $10,000,00 of debenture notes in 1932. This last retirement was made possible by an advance from the A. T. & T. Co. These advances from that company totaled $32,600,000 at the end of 1932. All such loans are temporary and should be permanently financed, but permanent financing is impossible under present conditions.

Savings Banks Require 6 Per Cent.

Mr. Marshall declared in his argument that there is no difficulty in raising capital now, but he has no way of knowing this. The company believes it would be impossible to issue stock under present conditions. Mr. Moore's testimony on these matters correlates with that of Chief Engineer Manson, who testified that in spite of the company's great loss of stations, some new construction work would be required.

Mr. Moore pointed out that in view of this necessary new construction and the total advances from the American company, there will exist a need for permanent financing which would be difficult to accomplish even under an 8 per cent dividend rate. He testified that since the company has gone on a 6 per cent dividend basis, financing has necessarily become a difficult if not an impossible problem. He emphasized the fact that if the company fails to pay its 6 per cent dividend in any one year, its bonds will cease to be legal investments for Massachusetts savings banks. This is one of the best answers to the Marshall contention on behalf of a 5 per cent return.

Further, Mr. Moore testified that at the end of 1932 the surplus was $8,789,199, a very small amount for a company like the New England, having in 1932, plant, general equipment and working capital of an average book cost of $314,454,000; and that after the payment of the regular dividend for 1932 there was a deficit on the year's operations of $1,667,786, of which $1,346,008 resulted from operations in the final six months.

Record of Company's Surplus.

Mr. Manson's testimony regarding surplus pointed out that it was $6,809,935 at the end of 1921, and that it dropped to $981,944 at the end of 1925, the drop being almost entirely due to inadequate rates and the expense of the strike in 1923. He stated that the surplus began to rise at the end of 1923 and had reached $9,125,298 at the end of 1930.

While this was an increase of about $2,300,000 from the end of 1921, it came about through a downward trend through the first half of the period, from $7,000,000 to $1,000,000 followed by an increase from $1,000,000 to over $9,000,000. In 1933, Mr. Grant said, the company will fall short of earning its 6 per cent dividend by about $500,000. The surplus as of September 30, 1933 was $8,283,338, an insufficient amount for such a company as the New England.

Rate of Return.

Turning next to the rate of return on the book cost of the company's plant, general equipment, and working capital during the last eight years in Massachusetts, Mr. Moore's testimony showed that for 1932 the average book cost was $231,823,297; that for the various years since 1925 the rates of return on average plant, general equipment and working capital have varied from 3.8 per cent in 1925 to 6 per cent in 1929, dropping to 5.1 per cent in 1932. The rate of return for the first nine months of 1933 on an annual basis shows a downward trend to 4.667 per cent.

In Illinois Bell Telephone Co. vs. Gil-

(*Please turn to page* 21.)

(*Continued from page* 16.)

bert et al (Dist. Ct. N. D. Ill., E. D. April 29, 1933), the court said:

We have given weight to the facts of which the court takes judicial notice relative to the general decline in corporate earnings during the years 1931 and 1932. It is for this reason that we have fixed 6½ per cent as the proper rate of return for 1931 and 5½ per cent as the proper rate of return for 1932.

A public utility enjoying the advantages of plaintiff is not entitled to the large earnings made by many undertakings during periods of great prosperity. On the other hand, its return in times of business adversity should not be reduced to the extent that the earnings of many private corporations have been impaired. The range of from 7½ per cent to 5½ per cent as found in this case gives weight, in our opinion, to all of the elements which, under the rulings of the Supreme Court, we are required to consider.

It should be remembered, Mr. Grant said, that these percentages were applied to the figure representing the fair value of the property as found by the court, which for each of the years from 1925 to 1932 inclusive was more than the book cost; and that in the present case in New England the rate of return for these same years as applied not to the fair value but to the book cost, have all been materially less than the rate of return approved by the court in the Chicago case for the same periods of time on relatively larger bases. It should be noted that the company and the city have both appealed the Illinois decision.

Although the South Carolina Railroad Commission entered an order in January, 1933, to reduce the rates of the Southern Bell Telephone & Telegraph Co., the schedule of reduced rates was calculated by the commission to produce between 6 and 7 per cent on the fair value of the property. This the commission held reasonable under prevailing operating conditions.

In the case of the Los Angeles Gas & Electric Corp. vs. the Railroad Commission of California (S. C. May 8, 1933) the court has sustained an order of the commission which allowed a return of 7.7 per cent on the basis of historical cost and 7 per cent on the basis of fair value.

Losses of Stations and Revenue.

The New England company lost in 1932 about 120,000 stations in its territory as a whole. Thus far this year it has lost about 44,000. The loss of stations in Massachusetts was about 86,000 in 1932 and 32,000 so far this year. That is, the company is losing the revenue from more than 164,000 stations for the system as a whole, aside from its substantial losses in toll revenue.

The company's gross revenues for the first nine months of 1933 were $8,000,000 less than for the same period of 1931. It is indicated that the same rate of loss will continue for the balance of the year. This will bring the company figure to about $10,700,000 less gross revenue than in 1931. In other words, this about equals the additional losses Mr. Marshall would impose on the company through this so-called promotional rate schedule.

No Appraisal Required in This Case.

Neither the complainants nor the respondent in this case has presented the commission with an inventory and appraisal of the property. The record indicates that such work, with its attendant cost, ultimately to be borne by the rate-payers, is unnecessary to determine the rate base of a utility whose tariffs are being attacked, if, as in the present proceeding it appears from the books that the utility is earning less than a reasonable return under its prevailing rates.

This implies, of course, that the books are well and truly kept in accordance with the methods prescribed by the Interstate Commerce and state commission concerned.

Strength of Chief Engineer's Testimony.

George K. Manson, chief engineer of the company, testified at length in the case in criticism of Mr. Marshall's testimony and exhibits dealing with the alleged overbuilding of company plant, machine switching vs. manual operation, contractural relations of the New England, American and Western Electric companies, and the subject of depreciation expense. Mr. Grant said that, if it becomes necessary to file a brief, this testimony will be reviewed in detailed analysis, but for the purposes of argument a few features suffice.

By a very few simple exhibits (previously published in TELEPHONY) Mr. Manson pointed out the fallacies of Mr. Marshall's procedure and conclusions regarding the alleged overbuilding of plant. Mr. Marshall expressed this overbuilding as $108,000,000; and he criticized the management of the company for building plant during what he called the troublesome times of 1929-31.

One of the fallacies of the foregoing figure is due to the fact that Mr. Marshall applied the 1922 average investment per station to the number of 1931 stations, and failed to recognize among other things the large amount of plant built by the company since 1922 at post-war price levels. Likewise Mr. Marshall failed to recognize the necessary restrictions of plant margins so sadly depleted in 1922 and the great congestion which followed the war, making it difficult for the company to render service in kind and quantity demanded by the public.

As to the charge that the company should not have built during the early years of the depression, Mr. Manson pointed out that it was gaining stations in 1929 and 1930. It gained 36,409 stations in 1929 and continued to gain until the middle of 1930; also, toll messages in 1929 were 6,000,000 more than in 1928 and continued to gain in 1930.

The company's gross construction during those years was not out of line with these increases in business and apparent prospects for their continuance, and as late as October, 1929, it was difficult to obtain necessary additional equipment from the Western company because of the demands upon it. Some of the important projects which the company started in 1929, it found advisable to complete at a later date when conditions had become unfavorable.

Quantities Proper Measure of Plant.

Mr. Manson's testimony pointed out that a serious error in Mr. Marshall's attempt to prove overbuilding was that he measured the plant by dollars rather than by quantities. He illustrated this by reference to various classes of plant. It is obvious that the writing of new plant on the books at higher prices when the company is removing old plant at lower prices, inevitably increases the investment out of line with the plant units.

It is true that the wire mileage per station and per circuit have increased. This, Mr. Manson's testimony showed, is due to the increase in the number of individual line subscribers as the company began to build plant to relieve the post-war congestion. Similar characteristics were pointed out in reference to underground, submarine and aerial cable.

Further, in explanation of the increase in wire mileage used by Mr. Marshall as an evidence of overbuilding, Mr. Manson referred to the use of aerial cable to replace open-wire lines and the tendency of new subscribers to locate more remotely from the central offices. Both of these factors operate to increase the wire mileage by reason of longer circuits and the necessary spare wires in cables. The substitution of the cable for the open-wire reduces operating expense and makes the plant less susceptible to interruption.

While dealing with this general subject, the testimony of Mr. Manson pointed out how improvements in the art through the use of fine-wire cables and their substitution for open wire, have reduced investment per mile of wire and improved the quality and reliability of service; that this progress is evident in connection with both toll and local exchange plant; that loading coils and repeaters now permit the use of No. 19 gauge wire as contrasted with the heavier gauge of earlier years, with resulting reduction in the weight of wire and its cost per mile.

Good Management Shown.

Mr. Manson's testimony contradicted the Marshall allegation of overbuilding of station and central office equipment. The former pointed out that certain of the increased investment costs reflected the higher price levels, but that in this connection the commission should consider decreases in operating costs and noticeable improvement in the quality of the service as a result of that investment. Mr. Grant declared that

Mr. Marshall had failed to cross-examine Mr. Manson on any phase of the latter's criticisms of the Marshall exhibits.

At the end of 1931, 80 per cent of the building investment had been incurred during the periods of high prices, averaging in the ratio of two to one as compared with the period before 1915. The increase in company-owned buildings and the lessening of leased quarters also increased the building investment. Great congestion existed in central office equipment, toll and exchange plant, and buildings in 1920.

Mr. Manson went thoroughly into this subject in his testimony, introducing blueprints and illustrative concrete references which were presented to the board. In his endeavor to show the comparisons in the cost of buildings as of different years, Mr. Marshall made use of the value of the manual buildings from the 1924 appraisal. He failed, however, to apply the overhead to the amount shown in that appraisal and thus made an error of about 16 per cent.

Cross-examination of Chief Engineer.

At one hearing, Commissioners Wells and Webber both questioned Mr. Marshall and Mr. Manson on this matter. Commissioner Wells said:

"If a public service corporation is to render satisfactory service to the public, the management has to plan a considerable number of years ahead in order to meet the reasonable demands of normal growth. . ."

Commissioner Wells also asked Mr. Marshall if he was familiar with the congested condition of the company's plant immediately after the war and said: "Your argument is that the company has unduly extended its investment in plant, but can the investment be determined by your method?"

The "Boston Evening Transcript" of November 21, 1929, printed an article entitled, "What Is Ahead for New England?" Mr. Marshall wanted to introduce this as an exhibit (since it was related to a long-range study of telephone possibilities), but Commissioner Wells said that the petitioner should not spend too much time on it, since it appeared that this was an ordinary general forecast and did not commit the company to any definite plan.

Reliance of Long Forecasts.

He said later: "I do not think you can connect the plans and studies made before the period of depression to the rates which are to be in force hereafter . . . The company, without providing these additions, might fall down tremendously in giving service to the public."

A little later, Commissioner Wells said: "In our experience here there has been a considerable number of residential customers who wanted to change over from four-party to two-party service, and from two-party service to single line service; and it has often been true that the company was unable to furnish the plant required and to make the change when the customer wanted it."

Marsall Condemns Individual Lines.

With a surprising lack of knowledge of the essentials of this industry, Mr. Marshall condemned the use of individual lines as a wasteful development of the company's plant. Commissioner Webber pointed out that a desire for such facilities is perfectly natural even at the extra cost. Commissioner Hardy felt that Mr. Marshall's cross-examination had no relation to the issues of the case.

In regard to building investment, Commissioner Hardy said: "To go back to the building proposition, we are not invested with power to determine the operations of this company or its practices in connection with the installation of its plant; what kind of material shall be used, or what its cost may be."

At this point Commissioner Stone observed: "I understood Mr. Manson to make what semed to be a complete answer: that they had used their best judgment. It may be that their judgment was not correct, but what other guide have they got to go by? . . . I recall, Mr. Marshall, when for two or three years the telephone company was open to censure because they could not take care of the people, and that criticism was very strong."

Concluding his cross-examination on alleged overbuilding, Mr. Manson said:

"We could not have built more plant during the war, for obvious reasons. We used up the slack during the war. Then, there was a popular demand for everything and prices had gone up. The plant we built was built at the high post-war prices, and that was in response to public demand. That is why we say that gauging the plant built, by dollars, is not a satisfactory measure."

Mr. Marshall testified, argued or charged, as the case may be, that machine switching development was directly responsible for the large increase in the total capital of the company between 1921 and 1929.

A résumé of the company's defense, as argued by Mr. Grant, and the balance of his presentation, with Mr. Marshall's rebuttal argument, will be covered in a later issue of TELEPHONY.

Outside Plant Men Talk Things Over

The Uneventful Life of a Telephone Trouble-Shooter.

By "Doc."

Numerous were the schemes practiced in the old days to get more work out of men in line gangs. The foreman of some gangs would pick out an exceptionally good lineman and secretly pay him five dollars per month more to lead the gang, knowing the rest would make an attempt to hold his pace. This scheme generally worked in that it increased the quantity of work completed, although the quality likewise suffered.

Our foreman never resorted to such crude tactics, for he knew that we were all loyal and would always give him our best. He repeatedly told us that once we were on a pole, to complete the job to the best of our ability regardless of how long it took, so that a second man need not go back later to repair the sloppy work performed by some lineman in a hurry.

In this idea he was far ahead of his time, for such tactics are generally observed on all telephone work today and one never hears of "rawhiding" in a modern line gang. I might also add that this same far-sighted foreman now holds a high position in the modern telephone world. That, I believe, proves that it always pays to insist that all telephone tasks, no matter how minor, be performed to the best of one's ability.

The labor turnover of the present-day telephone company is comparatively small but such was not the case in the old days when "boomer" linemen roamed the country. These linemen with the wanderlust were in a class by themselves and were all masters of their trade. Foremen would always hire them, knowing full well that they would probably not stay more than a month, if that long, but that while they were on the job they would earn their pay and more.

As a rule, they were a quiet, easy-going lot; never talked much about themselves or the places where they had worked. They had a slow, easy stride which never varied, but it took a mighty good man to follow them all day, for with them there was no lost motion or wasted effort. Like the birds, they migrated south in the fall and north again in the spring. It got so that we watched for their coming with pleasure and always had a feeling of sadness when they left.

The old saying that "A rolling stone gathers no moss" is perhaps true as they were always broke; but it is likewise true that the roamer gets something that one can never acquire living his life in one place on one job. I believe that the best type of telephone man is the one who does his roaming in his younger years, and then settles down on one job and decides to make it his life's work.

Changing times, machinery and other

conditions have eliminated the boomer lineman and he has no place in the modern telephone game. I haven't seen a boomer since the war and I can't help but wonder whatever became of Scotty, Harrison, Jack, Russell and the many others who used to pay us periodic visits. Present-day linemen think of the boomer as a tramp; perhaps he was one, of a little higher type than the average, although we never considered him as such. We old hikers knew him for what he really was, and he shall ever retain a fond nook in our memory.

The Man Who Thinks He Knows Everything Is Kidding Himself.

By Jake, The Lineman

Mornin' buddies! The other day I ran into a young feller who actually thought he knew everything there was to know about the telephone business.

Buddies, there's always somethin' new to learn about the telephone business or any other kind of business. Michelangelo was perty nigh 72 years of age when he was appointed chief architect of St. Peter's. For nearly 18 years he worked on the greatest temple in the world, making it beautiful with his marvelous paintings and sculptures.

Toward the end when his eyesight failed and he had become feeble, he had his servants carry him into the great halls where he had labored so many years. While there he would run his hands over the statues and carvings, feeling out the details he could no longer see. After having done this, his face would light up and he would exclaim: "I still learn!"

How many of you fellows can say "I still learn?" If you can't say it you had better learn, for when a man reaches the deadline of knowledge and feels that he can learn no more, he is only kiddin' himself.

The same thing applies to safety. When any worker thinks that he knows enuf about safety to pass up the bulletin boards and the safety meetings, Ole Man Accident is apt to let him know just how little he really knows about safety. Keep studyin' your jobs, buddies. Read the bulletin boards and attend the safety meetings.

Now what say we study over a few accidents that happened to fellers, who thought their knowledge would fill volumes and found out it would only fill up a page? How about it? O. K., let's go:

A lineman removed a crossarm from a pole an' instead of lowering it to the ground with a handline, he dropped it. Just as it left his hand his partner came from behind the truck, walked over towards the pole right in time to be struck by the falling crossarm. The poor fellow was laid up for 13 weeks with a cracked head and a broken shoulder; and the other fellow got a 30-day vacation minus the shekels!

Careless acts constantly cause accidents: A splicer's helper heated a pot of paraffin and sent it up to the splicer who was workin' on the platform above. The splicer removed the lid and the paraffin ignited. In the excitement which followed the splicer was badly burned on the face and arms. The investigation disclosed that although the helper had tested the paraffin with a thermometer and heated it to the proper temperature, he had forgotten to shut the furnace off and had not removed the paraffin from the furnace until the splicer had called for it. Of all the dumb ones, that is sure one of them. Enuf sed.

Countless times I have warned you, buddies, to keep your pointed and edged tools in special containers. But in spite of warnings and pleas I have here in front of me an accident report which proves that some folks think they know it all. The other day a splicer, while rummaging in his tool bag for his pliers, cut his hand on a chipping knife which happened to be in the bag. He failed to treat the wound and it became infected, and the thumb was amputated. To folks who fail to practice safety, all I can say is: "Live and learn!"

In most every office there is at least one employe who seems to get a thrill out of sitting with his chair tilted at angles defying the laws of gravitation. Last week one of these chair-tilters swayed 'way back in his chair, only to find that the chair kept on going. In a desperate effort to balance the chair the employe badly sprained his right wrist and as a result lost three days' work. Here's hopin' that the guilty ones will change their ways!

Don't ever blame a foreman for an accident which happens when employes disregard instructions. Not many days ago a groundman was dismantling an old 25-foot pole which was set five feet in the ground. He disregarded his foreman's instructions to guy the pole. As a result, after he had removed the strand and one side guy the pole broke off at the butt and fell. The employe sustained a fractured pelvis and some fiery criticism.

Every once in a while there is an accident similar to this one—in fact, there's gettin' to be too consarned many of them: A lineman, who was wearing his climbers while working on the ground, stepped into a hole concealed by snow. The gaff of one climber was driven into his right leg just above the knee. Take warnin' from this accident and don't wear your climbers while workin' on the ground.

Now, how about this accident for a dumb one, which proves that "there's one born every minute": A cable splicer placed a lighted furnace in a manhole to drive out the cold and dampness. He returned 20 minutes later and with a lighted torch in his hand entered the manhole and proceeded to dry off the walls with his torch. Needless to say an explosion occurred and the splicer was badly burned.

Take heed from these accidents, buddies. Don't let the same things happen to you. Nowadays no one can afford to have a costly accident. And there's no need to have any, for it's just as easy to do your work safely as to do it carelessly. Resolve to practice safety all the time and you'll have a no-accident record worth boasting about.

Some people argue against safety, and

Cook "O" Sub-Station Protector

A weatherproof and fireproof completely enclosed sub-station protector for outdoor mounting that provides perfect protection and excellent facilities for line, instrument and ground connections.

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Cook "O" Protector keeps all high potentials out of the subscriber's premises. It reduces maintenance expense since it is always accessible to the trouble man.

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IF THERE'S someone you want to make particularly happy this Christmas—give a telephone. Your gift will bring months of comfort and convenience, happy visits with friends, hours saved from routine shopping, freedom from that shut-in feeling.
If there is already a telephone in the home, increase its usefulness and convenience. Give an extension for kitchen or bedroom, a handset or the pleasure of out-of-town calls at your expense.
Each gift will be delivered on December 24th in a Christmas wrapping, with a greeting card bearing your name.
Telephone service is a thoughtful, practical gift. It gives satisfaction out of all proportion to its cost.
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The gift of gifts for the person without a telephone. $7.50 will pay for installation and one or two month's service, depending upon locality and class of service. You can also arrange for any other length of time.
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Attached please find check for $_____covering cost of_____Handset Telephone; _____Toll Coupon Books; _____Telephone Service; _____Extension Telephone.
Please deliver it on December 24th in a Christmas wrapping with gift card bearing my greetings, to—
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ADDRESS
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MY NAME
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TOWN
If you want further information, check here_____and send in this coupon with your name and address.

Here Is an Advertisement That Is Sure to Attract Attention Because of Its Unusual Character. It Is One of Three Advertisements of the Southern New England Telephone Co., Featuring Telephone Gift Plans Which Will Be Published in Large Size in Connecticut Daily Newspapers During the Two Weeks Before Christmas.

some argue for it. Wa'll I have only one thing to say and that is: There are two sides to every question, but there are also two sides to a sheet of sticky flypaper and it makes a whale of a lot of difference to the fly which side of it he chooses to sit on. Think it over!

Guess I'll be amblin' but I'll be back again. Until then remember: "As a rule the fellow, who thinks others are holding him back, is generally rumblin' along with his brakes draggin'. The same thing applies to the careless worker."

Take care of yerselves and protect yer anatomy by practicin' safety.

Talking Relays in Cord Circuits; Happy Days of Yesterday.

Editor, TELEPHONY:

"You ain't heard nuthin yet!" Those telegraph cable men who got "all het up" because they heard "music from the deep" as per the article in TELEPHONY, September 23, 1933, in the "Outside Men Talk Things Over" section, ain't heard nuthin neither.

We got talkin' relays in our cord circuits down here in Del Rio, Texas, "where the summer time spends the winter"; and you don't need nuthin but yore ears to hear 'em neither. You don't need no radio apparatus nor explorin' coils of any kind. All you gotta do is to sit down behind the switchboard and hear all kinds of gossiping. These relays "talk to" the fellow behind the switchboard, but they don't talk to one another (cross talk). Explain that away, will yuh?

Some times the "jabberin" is so loud that one does not have to sit down behind the switchboard; he can hear them talking while he is standing up, which would mean several feet in my own case because I am so tall. When they are loud I have stood three feet from the switchboard—and I stand 6′ 3″ tall—and could hear every word very plainly. In fact, as plainly as Edison's first phonographs when you had to stick tubes in your ears to hear the "recording," as the radio announcers call records.

Now a word for "Doc": If "Doc" doesn't quit writin' like he does, I'm going to have to put on the hooks again. His story about the songs of the linemen in November 25 issue "carries" me back to the happy days of yesterday.

Those were the days of hard work and jolly fellows. Those were the days when all we had to do was work hard and "look out for six o'clock and pay day" as one of our foremen told me upon one occasion, when he was making out his monthly time report. That was up in Missouri just 30 years ago this month. Those were the days when we had never a care. Bless you "Doc", keep up the good work and keep us young.

The writer has been in the "game" since the first Monday in March, 1898—35 years and some months ago—with the first 20 years full of this happy-go-lucky, care-free life of ups and downs. Ups and downs, indeed; up and down poles of all sizes and condition, but what of it! If the pole was good or bad and work had to be done on it, up we went and considered it just a part of a day's work. We "set lots of them afire" but what of it; we went right back up, if we were not hurt too badly.

More power to you, "Doc"!

T. J. PAUL,
Plant Superintendent,
Del Rio & Winter Garden Telephone Co.
Del Rio, Texas.

Bell and Independent Groups Considering Telephone Code.

News dispatches from Washington, D. C., on December 1 quoted Hugh S. Johnson, recovery administrator, as stating at a press conference that he would if necessary "impose" labor regulations on the telephone industry, and on the aluminium business, which is 98 per cent in the hands of the Aluminum Co. of America dominated by the Mellon family.

The A. T. & T. Co., General Johnson said, "didn't want to come in" because of its non-competitive character. In reply to a letter written him by Walter S. Gifford, president of the American Telephone & Telegraph Co., Mr. Johnson said he would insist on a code with labor provisions.

Mr. Gifford in a statement made after receipt of the news reports concerning General Johnson's reference to the Bell System, said that "the Bell System, including the American Telephone & Telegraph Co., has cooperated fully with the NRA from the beginning and is now working under a wage and hour agreement and will be glad to continue to do so.

"The question under discussion has been

not whether we should continue to cooperate with the NRA, but merely the method by which we should do so."

The letter from Mr. Gifford to which General Johnson referred was said to have contained three points:

That the A. T. & T. Co. was non-competive; that it was already subject to so many governmental regulating agencies that it did not require a fair practice code; that the 6,000 or more Independent telephone companies might be driven out of business if they had to live up to A. T. & T. wage levels, and that his company did not wish to be associated in the public mind with this destruction.

As telephone men know, the Bell System companies have been operating for several months under the President's Re-employment Agreement as modified in certain particulars and filed with the National Recovery Administration on August 11. The complete text of the modified agreement was published in TELEPHONY of August 19.

The code committee of the United States Independent Telephone Association held a meeting in Chicago on Monday, December 4, and expressed itself as unanimously of the opinion that the Independent companies cannot go under the wage and hour schedules for Class 5 and 6 exchanges as provided in the Bell System code.

The code committee also voted that the United States association should adhere to the schedules for those classes as included in the modified agreement filed by the association and as provided in the President's Re-employment Agreement as amended for the Independent companies. This was published in TELEPHONY of September 9.

The committee also voted that all telephone exchanges in towns of less than 2,500 population should be exempt from any code adopted.

The committee is of the same opinion as reported to be expressed by the American Telephone & Telegraph Co.: that inasmuch as the telephone is a non-competitive industry, subject to municipal, state and federal regulation, the National Recovery Act is not applicable to it.

The committee will hold conferences with the NRA and Bell group representatives in Washington this week.

What the Commissions Are Doing

News Regarding the Activities of Various Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of the Orders and Schedule of Hearings

Central West Public Service Co. Placed in Receivership.

Federal District Judge James Donohoe, at Omaha, Neb., on December 4, declared the Central West Public Service Co. insolvent and appointed Charles F. McLaughlin, former president of the Omaha Bar Association, as receiver to wind up its affairs. The company was declared bankrupt by a Texas chancery court the week previous.

The petition in the federal district court was filed on December 2 by four holders of first mortgage bonds amounting to approximately $5,000. They said that no interest had been paid them since May, 1932. They are H. G. Craig of Gregg County, Texas; L. F. Troxell of Stephens County, Texas; William Berry of Little Rock, Ark., and C. L. Wakefield of Dallas, Texas.

Receiver McLaughlin takes the place of the First Union Trust & Savings bank of Chicago and John C. Mecham, also of Chicago, who were operating the properties in Minnesota, Iowa, Nebraska and the Dakotas for a bondholders' committee representing 82 per cent of the outstanding issue.

One of the complaints set forth in the petition was that the trustees had paid 50 per cent of back interest due to those who signed the trust agreement and had refused to pay anything to those bondholders who had declined to sign. The suit was in the nature of a creditors' bill and declared that the corporation was "wholly and completely insolvent," and that gross income had declined 25 per cent and its net income 50 per cent.

Receiver McLaughlin will have charge of the properties in the states named. The company operates properties also in Virginia, West Virginia, Illinois and North Carolina. Its headquarters are in Omaha. Frank Milhollan is president and R. A. Phillips executive vice-president of the Central West company.

Bell Denied Temporary Injunction; Independents Granted One.

Judge E. Marvin Underwood, in a decision handed down in federal district court in Gainesville, Ga., on December 1, denied the application of the Southern Bell Telephone & Telegraph Co. for a temporary restraining order to prevent a 25 per cent rate slash decreed by the Georgia Public Service Commission in an order issued November 16, effective December 1.

A hearing on a permanent injunction will be held in Atlanta before a three-judge tribunal on December 11.

While Southern Bell company lost its legal battle for a temporary injunction, the seven small Independent companies were protected against the reduction by a temporary injunction granted by Judge Under-

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wood. Three more of the small companies were exempted from the rate slash when the commission agreed to make further investigation in their particular cases.

The seven companies protected by the injunction are: Southeastern Telephone Co., Georgia Continental Telephone Co., Cairo Telephone Co., Statesboro Telephone Co., Douglas Telephone Co., Consolidated Telephone Co. and the Dalton Telephone Co. The three companies exempted by the commission are the Chattsworth Telephone Co., Western Carolina Telephone Co. and the Thomaston Telephone Co.

Each of the seven companies protected by injunction must file bond pending a hearing before three federal court judges in Atlanta on December 11. These bonds will guarantee that the customers of the seven companies will get refunds in case the federal court upholds the commission's order. The hearings on the temporary injunctions were held on November 30 and December 1.

In all instances the telephone companies contended that the 25 per cent rate reduction is confiscatory and under the fourteenth amendment to the federal constitution deprives them of their rights and property without due process of law. The public service commission at the outset of the hearing filed an answer denying the contentions of the utilities and asking Judge Underwood to dismiss the suit.

Judge Underwood in ordering a continuance of the hearing on November 30, stated from the bench that the evidence on the part of several of the small Independently operating companies "overwhelmingly showed that some of the small companies are not making operating expenses."

The Southern Bell company was represented by Sanders McDaniel and E. D. Smith, while the Independent companies were represented by Marion Smith and J. Prince Webster, all of Atlanta.

Arguments were made by all of the attorneys in the case, those for the telephone companies submitting to Judge Underwood figures on the operating costs and the income of the various companies in the court action, while those representing the commission contended that evidence submitted by the companies at the long hearing which preceded the rate reduction order, showed that the economic conditions of the companies and the general economic situation warranted the cut.

Governor Talmadge declared on November 28 that unless cheaper telephones were made available, he would order the telephones in the governor's office and the mansion taken out. He announced on December 1 that several state department heads had assured him of their intention to dispense with telephone service if a federal court injunction prevents enforcement of the 25 per cent rate cut. He indicated that not only would he insist on the removal of all telephones at the Capitol, but also from all state institutions.

Answers to the Traffic Questions Presented on Page 14.

1. There is no way in which the subscriber can compel the operator to secure messenger service. However, if it is possible for the operator to arrange for this service, she should do so. In cases where there is no regular messenger service, it is usually possible for the operator to obtain the services of a school boy or girl to act as messenger and, in some instances, an operator who is off duty will act as messenger. The party acting as messenger should be paid for this service in accordance with the rate charged by a regular messenger office.
2. See the introduction to this set of questions and answers.
3. See the introduction to this set of questions and answers.
4. Ring the called number at ten-second intervals. Two minutes from the time the connection was established, if the called station has not answered, give report: "They have not answered yet. Shall I keep on ringing?" If the calling party requests you to continue ringing, ring another minute and then give the report, "I am sorry, they do not answer," if the called station fails to answer.
5. The "by" is given to the calling party and the operator dismisses him saying, "I will call you in a few minutes."

Governor Talmadge removed the full membership of the Georgia Public Service Commission in July and appointed the present body with Jud P. Wilhoit, former highway board member, as chairman. At that time he announced that the board would go fully into charges made by public utilities and have them reduced.

He has since taken the speaker's stand on several occasions and urged the people to defeat at the polls any judge who issued a restraining order against the commission's orders for rate cuts. However, the present suit does not come under state judges, and federal judges are appointed by the President of the United States.

Receiver Asked for Middle Western Telephone Co.

Appointment of a receiver for the Middle Western Telephone Co., of Chicago, Ill., was asked in a petition filed in Chancery Court in Wilmington, Del., on November 27 by Fred T. Vaux of Chicago, owner of $10,000 of its convertible gold debentures. Mr. Vaux alleges the company is insolvent. The company denies the charges and will oppose the action.

The Middle Western Telephone Co., through stock ownership controls the Middle States Telephone Co. of Illinois which has its headquarters at Pekin; the La-Cross Telephone Corp., LaCrosse, Wis.; Warren Telephone Co., Warren, Ohio, Ohio Central Telephone Corp., Wooster, Ohio; and the Mt. Vernon Telephone Corp., Mt. Vernon, Ohio.

Suburban and City Service Separation Proposed for Los Angeles.

Establishment of telephone service in the Los Angeles metropolitan area on an entirely new basis was proposed on November 28 before State Railroad Commissioner Whitsell by Ernest Watson, telephone engineer for the California Railroad Commission, at the resumption of the commission's investigation of the Southern California Telephone Co. in Los Angeles.

Engineer Watson's plan, an enlargement of the arrangement proposed for Montebello and Culver City on October 18, was presented under two headings, one pertaining to what was designated as extended service, and the other applying to the recentering of the Los Angeles exchange for toll-rate purposes. It was testified that the plan would cause a reduction of company revenues and a corresponding saving to subscribers.

Extended service arrangements, as presented by the engineer, were divided into two sections. One division applied to Los Angeles subscribers, with the exception of those in the three wire centers in the downtown district. The other dealt with subscribers located in exchanges contiguous to the Los Angeles exchange.

With reference to subscribers within the Los Angeles exchange, Engineer Watson said all subscribers, with the exception of the downtown users, would be able to telephone to parties in contiguous outside exchanges without extra charge, at the same time having available, as in the past, all local stations now available.

As for subscribers in exchanges that are contiguous to the Los Angeles exchange, Mr. Watson said they would have the option of continuing their present rate and having available all stations that are now available, or of subscribing to extended service, which rate would entitle them to service without payment of a toll charge to all subscribers in their exchange and, also, subscribers in the territory immediately adjacent to their exchange.

This extended service principle would be extended, the witness said, to all exchanges contiguous to Los Angeles with the exception of the Van Nuys and West Los Angeles exchanges. Mr. Watson suggested a separate exchange for Beverly Hills.

Suggested rates applicable to extended service in exchanges outside the Los Angeles exchange were given as follows:

Business individual line, desk-set measured service, $5.50 for 85 messages and 3½ cents for each additional message. this rate being the present Los Angeles rate. Residence individual line, flat rate.

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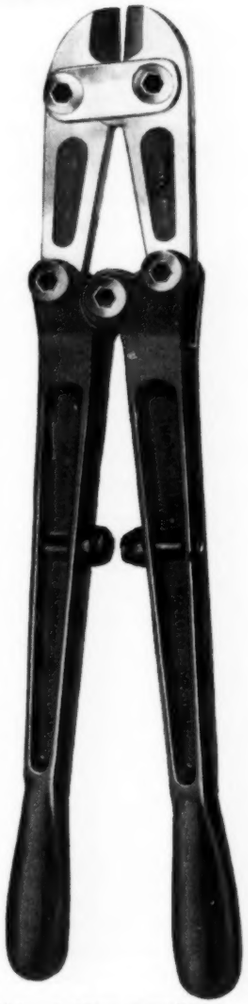

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desk-set service, $4.25 a month, and residence two-party line, flat rate desk-set service, $3.25 a month.

Mr. Watson said that the residence rates are 25 cents less than the present Los Angeles rates for the same class of service. Whether or not subscribers in the areas adjacent to Los Angeles would receive the optional service would be optional with them. There would be no increase in the charges to any subscribers who elected to continue their present service, he pointed out.

Taking up the recentering of the Los Angeles exchange for toll purposes, Mr. Watson said that this change would bring about, generally, a 5-cent reduction on messages between suburban exchanges and the Los Angeles exchange. In some instances, over routes where there is little communication, there would be a 5-cent increase, he said.

The telephone investigation will be resumed December 7. Parties to the inquiry asked the continuance that they might have an opportunity to study the proposal before launching into a cross-examination of the witness.

Florida Commission's Toll Order on Peninsular Company Enjoined.

Judge William B. Sheppard in federal court at Pensacola, Fla., on November 25, issued a temporary restraining order against the Florida Railroad Commission, suspending the commission's order of November 2, requiring the Peninsular Telephone Co. to put into effect lower toll rates in the St. Petersburg-Bradenton-Tampa area based on air-line distance.

The reduced rates went into effect November 21 and the old rate went back into effect at 2 o'clock Saturday afternoon, November 25, when word was received by the telephone company of the action of the federal judge at Pensacola.

Under the state commission's ruling, toll rates between St. Petersburg and Tampa were reduced from 35 to 15 cents, and the Tampa-Bradenton rate from 70 to 20 cents. The rates are now back to their former status.

Judge Sheppard announced a hearing would be held December 18 in Pensacola on whether the restraining order should be made permanent.

W. G. Brorein, president of the Peninsular company, in Tampa said the company "sincerely regretted the necessity for litigation" in connection with the rates. Such a course, he said, is costly in both time and money.

"We have always found the public generally agreeable to a fair price for a satisfactory service," he said. "Our company has had its hardships in common with other business. It cannot move its investment, clear its shelves or close its place of business. We are asking only for the privilege of running."

Handset Charge Case Before Ohio Supreme Court.

The Ohio Supreme Court on November 15 heard an appeal of the city of Cleveland from an order of the Ohio Public Utilities Commission permitting a charge for installation and use of handset type telephones. The commission's ruling permits the Ohio Bell Telephone Co. and the Cincinnati & Suburban Bell Telephone Co. to make a charge of 25 cents a month for use of such equipment for the first three years of their use by a patron.

Maryland Commission Orders Bell Company to Reduce Rates.

On Tuesday, November 28, the Maryland Public Service Commission ordered a general reduction in telephone rates charged in Maryland by the Chesapeake & Potomac Telephone Co. and a reduction in toll charges from ten to five cents in the exchanges at Towson, Catonsville, Pikesville and Woodlawn, which are adjacent to Baltimore. The new rate schedule, it is estimated, will reduce the gross revenues of the company about $1,200,000 annually or about $1,000,000 net.

The Chesapeake & Potomac company was granted until December 20 to decide whether it would accept the rate reductions as ordered by the commission. In its order, the commission says that if the usual methods of determining value by inventory and appraisal had been followed, it would have taken at least two years to complete the case. To follow such a plan would have cost the telephone company approximately $300,000 and the state a correspondingly high sum, the commission pointed out.

Instead, the commission pursued the method used by the statutory court in finding the value of the company's property in the 1924 telephone case.

Investigation of the rates and charges of the telephone company was instituted by the commission January 19, and hearings began on May 2. The hearings were concluded September 18.

The telephone company claimed a reproduction cost undepreciated, of $54,513,618, and a depreciated value of $48,144,672. On this it claimed the right to earn a return of 7½ per cent, or $3,610,850.

The commission, however, found the undepreciated fair value of the company's property, including working capital, to be $40,527,917, as of December 31, 1932, and a value, less depreciation, of $33,210,000.

The average value of the property in service in 1933 was found to be $32,498,094. On this the commission allowed a return of 6 per cent, or $1,949,886—a reduction in revenues for the telephone company of approximately $1,407,287.

The reduction was stated to involve a decrease in the tax expense item to the extent of 2 per cent gross revenue tax, the 1.5 per cent license tax paid to the American Telephone & Telgeraph Co. and the 13.75 per cent federal income tax.

The rate reduction is estimated to decrease the revenues of the telephone company from $12,248,000 to $11,148,000, approximately 10 per cent.

The specific reduction of $85,000 in toll charges ordered by the commission would reduce the toll service revenue of the company from $2,530,000 to $2,455,000.

The telephone company made a claim of $1,700,000 as a fair allowance for working capital. John Henry Lewin, former people's counsel, contended that an allowance of only $509,364 should be made. The commission allowed $660,863.

Chairman H. E. West pointed out that the commission took into consideration the

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generally unsettled condition of business and the National Administration's efforts to increase prices generally, and in view of these facts and in order not to have the company's return fall below 6 per cent, the reduction was ordered.

South Dakota Commission Limits Handset Charge to Three Years.

The South Dakota Board of Railroad Commissioners issued an order on November 29 to the effect that the present additional monthly charge of 25 cents for handset telephones, now being made by the Dakota Central Telephone Co. at its exchanges in the state, be discontinued to each subscriber after 36 continuous months' usage in the same exchange, effective February 1, 1934.

The commission stated that in the event the Dakota Central company should file written objections to the order, prior to its effective date, the matter should be promptly heard and this order withdrawn. A new order would then be entered following such hearing as the facts developed may seem to warrant.

The South Dakota commission instituted an investigation of the extra handset charge, following several informal complaints. In its order limiting the charge to three years, the commission stated:

"It has been found that the handset telephone is, to some extent, a luxury or added convenience, in that service of at least equal quality can be had with equipment for which no extra charge is made; also, that the handset has shown growth in the decline in general telephone usage during the period of low level of economic conditions, and it is argued that this demonstrates that the charge is not unreasonable.

It appears that the handset costs more than the standard set and that the former, by reason of the type of construction, is more expensive to maintain than the latter. From this it is argued that a special charge for a handset is necessary to protect the users of other types of telephones.

The company takes the position that the rates maintained by it for exchange service are relatively lower than the rates in effect for like service in any other state and, consequently, it should not be required to further deplete its revenues.

It is the further contention of the company that unless some extra charge is made for the handset, its substantial investment in standard sets would be largely lost by wholesale replacement, and that any such loss would not be in the public interest.

We believe that some charge is required for its restrictive effect under present conditions, and it appears that regulatory bodies generally having had occasion to deal with this question have also recognized this necessity. However, it does not follow that the charge need be continued indefinitely to afford adequate protection."

Summary of Commission Rulings and Schedule of Hearings.

CALIFORNIA.

November 23: Order issued authorizing the San Antonio Home Telephone Co. to discontinue service and withdraw its rate schedules.

December 7: Hearing at Los Angeles in investigation of Southern California Telephone Co. continued from November 28.

ILLINOIS.

December 14: Hearing on petition of city of Champaign for lower rates by the Illinois Bell Telephone Co. continued to this date from November 28.

INDIANA.

December 1: Orders issued decreasing rates of the Wabash Valley Telephone Co. about 10 per cent at Ambia, Pence, State Line, Tab and West Lebanon.

December 1: Five orders issued in commission's campaign to eliminate the 25-cent monthly extra charge for handset type telephones. The charge must be discontinued after patrons have paid $9. The orders were against all the remaining telephone companies not already instructed to limit these charges. They are the Home Telephone & Telegraph Co., Fort Wayne; Citizens' Independent Telephone Co., Terre Haute; Garrett Telephone Co., Garrett; Northern Indiana Telephone Co., North Manchester, and the Ohio River Telephone Co., Rising Sun.

KANSAS.

January 4: Hearing in Ogallah, Trego county, on complaint of the Ogallah Telephone Co. against the Ellis Telephone Co., of Ellis, relative to a division of territory.

January 11: Hearing in Hiawatha, Brown county, on complaint of A. A. Roseboom, of Hiawatha, against the American Telephone Co. asking the company to charge for service at party-line rates or on an extension basis.

January 26: Hearing in Whitewater, Butler county, on complaint filed against the Kansas Telephone Co. by merchants and other subscribers in the town of Furley as follows: Richardson & Leap, John Sanders, Boyd Bros., John Action, H. W. Kilert, and C. C. Merrill.

MARYLAND.

November 28: Order issued directing a general reduction in telephone rates in Maryland and toll rate reductions in four communities adjacent to Baltimore representing a reduction of $1,000,000 net annual revenue to the Chesapeake & Potomac Telephone Co. Investigation of the rates and charges of the company was begun by the commission on January 19 and the case was concluded on September 18.

MINNESOTA.

November 28: Approval granted application of the Hatch Telephone Co., a farmers' mutual corporation, requesting authority to sell certain telephone property located in Martin and Faribault counties, to the Blue Earth Valley Telephone Co.

December 12: Hearing in Backus in the matter of the request of the McKinley Township Telephone System, et al., similarly situated, requesting physical connection of their lines with the Backus Rural Telephone Co. at Backus.

December 28: Hearing in Bear River on application of the Bear River Valley Rural Telephone Co., requesting authority to move its central office from the village of Bear River, St. Louis county, to Side Lake, a distance of approximately 18 miles.

MISSOURI.

December 1: Approval granted application of J. W. Jones, Jr., for certificate to construct a telephone exchange at Dadeville to be known as the Ozark Telephone Co.

OKLAHOMA.

November 29: Hearing on application of the E. K. Cross Telephone Co. to consolidate the telephone exchanges located at Council Hill and Oktaha.

SOUTH DAKOTA.

November 29: Order issued limiting the 25-cent monthly additional charge for handset telephones to three years in all exchanges of the Dakota Central Telephone Co. in South Dakota. The order will be effective February 1, 1934, unless the company should file objections prior to that date in which case another hearing will be held.

UTAH.

January 8: Hearing resumed in statewide rate investigation of the Mountain States Telephone & Telegraph Co., instituted on commission's own motion following filing of complaint by Logan subscribers charging a discrimination in rates.

With the Manufacturers and Jobbers

"Crestalloy," a New Line of Crescent Tool Co. Pliers.

The Crescent Tool Co., Jamestown, N. Y., has just announced a new line of pliers, known as "Crestalloy" pliers. It replaces certain numbers in the S & H line of pliers. They are made of a steel which has been specially developed for plier making, never previously being used for the purpose.

Each pair of pliers is tested in a machine designed to apply a load as nearly as possible corresponding with actual conditions, except that the load applied can be increased to a point far in excess of any load applied by human hands.

Non-cutting pliers have an object placed between the jaws and the handles are compressed by a predetermined amount of pressure. To pass the test the plier must return to its original shape when the pressure is removed and the joint must work freely and easily without being loose. Cutting pliers in addition to the strength test, are required to cut off a piece of plow-steel wire of a size used in United States government specifications and in leading testing laboratories.

The new line of pliers includes end-cutting, diagonal cutting, and linemen's side-cutting pliers, long nose, long needle nose and other styles of pliers used in telephone work. They are all described in a new folder entitled Crescent Crestalloy

Another factor that makes it difficult, if not impossible, to specify the exact location of a fault on the basis of the wire chief's voltmeter reading, is the arrangement of a rural line, consisting usually of a main line with a number of branch lines or spurs which are tapped directly onto the main line. If a wire chief's voltmeter showed a fault location five miles out, it might be either on the main line or on a spur line.

A detailed discussion of the use of the wire chief's voltmeter will not be given here as this subject was covered

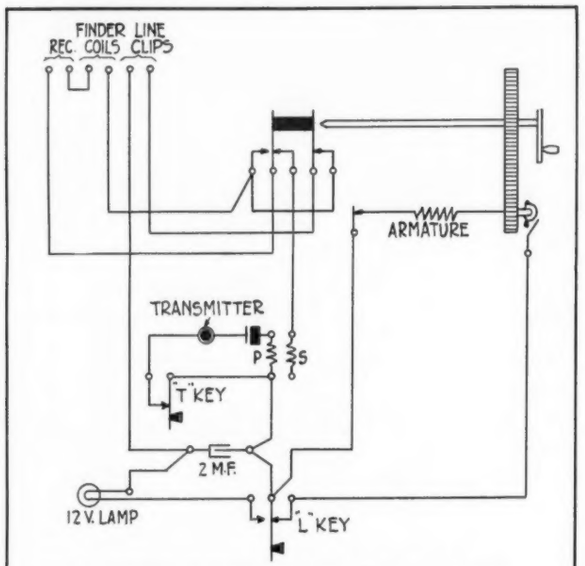

FIG. 6. CIRCUIT OF MAGNETO TEST SET EQUIPPED WITH INDUCTION FAULT FINDER (WEST TYPE).

quite fully in a preceding data sheet entitled "Testing Practices in the Small Exchange," Telephony of April 18, 1931.

After the wire chief determines that the trouble lies in the outside plant, the trouble ticket should be turned over to the troubleman, who proceeds out on the line.

Tests Out on Line.

If the open wire is visible all the way from the last cable terminal out into the country and the initial tests made from the office indicate the trouble to be some distance out, the troubleman can drive to the cable terminal and follow the line out into the country. If there is any reason to suspect that the trouble may lie in the cable, or in the lightning

arresters in the terminal, then a first test should be made from the terminal.

If the trouble is a fairly heavy ground or short-circuit, the magneto test set and exploring coil are most useful. If the nature of the trouble is such that the ground or short-circuit would not pass enough current to give a good indication on the exploring coil and receiver, the line should be opened and an ohmmeter should be used. The resistance reading in either direction should give a good indication of the direction in which the trouble lies.

Use of Magneto Test Set with Inductive Fault-Finder.

The magneto test set equipped with inductive fault-finder is the one piece of testing equipment which a rural troubleman cannot afford to be without. This instrument has the special merit of permitting the location of grounds, short-circuits, crosses, etc., without opening the line wires. It is equally useful on inside wiring.

The instrument consists of a compact unit containing a generator (special type), induction coil, transmitter, small battery, 2 m.f. condenser, 12-volt switchboard type lamp, receiver, inductive finder coil, and two push button keys.

Fig. 6 shows the circuit of one well-known test set.

The method and theory of operation of this set is as follows: Assume it is desired to locate a short-circuit in an open-wire circuit. The two line clips of the test set are connected to the line wires as shown in Fig. 7, and the finder coil is clipped over either of the line wires. The generator handle is turned briskly. If a loud tone is heard in the receiver, then the short-circuit lies on the same side

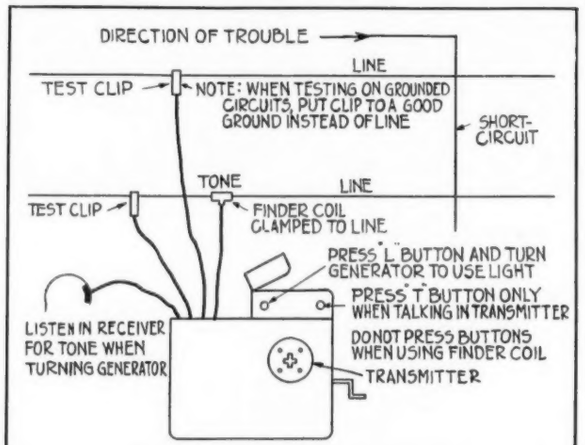
DIRECTION OF TROUBLE
LINE
TEST CLIP
NOTE: WHEN TESTING ON GROUNDED CIRCUITS, PUT CLIP TO A GOOD GROUND INSTEAD OF LINE
SHORT-CIRCUIT
TONE
LINE
TEST CLIP
FINDER COIL CLAMPED TO LINE
PRESS "L" BUTTON AND TURN GENERATOR TO USE LIGHT
PRESS "T" BUTTON ONLY WHEN TALKING IN TRANSMITTER
LISTEN IN RECEIVER FOR TONE WHEN TURNING GENERATOR
DO NOT PRESS BUTTONS WHEN USING FINDER COIL
TRANSMITTER

FIG. 7. MAGNETO TEST SET CONNECTED FOR LOCATION OF SHORT.

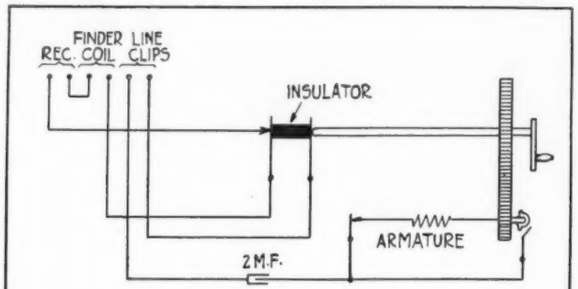

FIG. 8. CIRCUIT WHEN TEST SET IS USED FOR FAULT LOCATION WITH FINDER COIL.

of the line clips as the finder coil. If no tone, or only a weak tone, is heard, move the finder coil to the opposite side of the line clips and make a second test.

This method of fault location is based on the fact that any conductor which carries an alternating current has a circular magnetic field surrounding it. If a coil is brought near this circular magnetic field, a voltage of the same frequency will be induced in it. In the inductive type test set when arranged for fault location the magneto generator (which is in reality a low-frequency alternator) is connected in series with a 2 m.f. condenser and the circuit being tested as shown in Fig. 8. If the circuit being tested provides a conducting path between the two line clips, then the condenser will charge to the peak potential of the generator each one-half cycle.

By means of a small commutating device on the end of the armature, the generator armature is automatically short-circuited when the condenser has reached its maximum voltage during each half-cycle. The condenser being charged to a fairly high voltage (100 to 150 volts) and being a voltage source of very low resistance, it momentarily passes a fairly high current out over the telephone line.

The magnitude and direction of this current depends on the value of the impedance connected across the line clips of the test set. For example, if the line is short-circuited, then this will result in quite a high current flow from the charged condenser out over the line wires to the low-resistance short-circuit.

The greater the magnitude of the current flowing over the line wires, the greater will be the circular magnetic field surrounding these wires. And the stronger this magnetic field, the higher the voltage induced in the finder coil which is clipped over the line wire. Thus, for low resistance faults we get high test currents with resultant louder tone in the receiver which is connected directly across the finder coil.

Pliers, copies of which may be obtained upon application to the Crescent Tool Co., Jamestown, N. Y.

A. G. Nabors New Sales Manager of National Pole Company.

On November 1, A. G. Nabors, formerly manager of the utilities department of the Graybar Electric Co., located in Chicago, assumed the position of sales manager of the National Pole & Treating Co., Minneapolis, Minn., with offices at 111 W. Washington street, Chicago, Ill.

Mr. Nabors is well known to many telephone men, having been associated in the

A. G. Nabors, Formerly of Graybar Electric Co., Chicago, Is the New Sales Manager of the National Pole & Treating Co. He Assumed His New Duties on November 1, With Offices in Chicago.

industry since May, 1901. For five years he was in the long lines construction department of the American Telephone & Telegraph Co. Later he was transferred to the pole department of the Western Electric Co., where he served from 1906 until 1916 and during these years was located in many cities throughout the East and Middle West. In 1916 he was transferred to Chicago as manager of the pole department of Western Electric Co.

In 1918 he was made manager of the utilities department, which position he has held until this year. This branch of the Western Electric, it will be remembered, was taken over by Graybar Electric Co. in 1927.

A New Harmonic Converter for Small Telephone Exchanges.

The Automatic Electric Co., Chicago, has recently announced the perfection of a small capacity harmonic converter, designed especially for Strowger C-A-X's and R-C-X's. This machine is of the vibrator type and operates from an exchange battery of 48 volts. It can be furnished to supply any desired frequencies of ringing current, either in the standard multiple or non-multiple series.

The converter for each frequency has a capacity for ringing as many as 20 bells simultaneously. If divided ringing is used on ten-party lines in conjunction with a five-group ringing interrupter, this converter would have ample capacity to serve a 500-line exchange.

This converter can be furnished with either single or duplicate sets of vibrators. The transformers are self-protecting and require no external resistance for protection. Only one set of transformers is provided except on special order. The converter sets are designed for shelf-mounting on ordinary automatic telephone equipment frames.

Further information will be gladly furnished by the American Automatic Electric Sales Co., 1033 West Van Buren Street, Chicago, Ill.

Prices in the Metal Markets.

New York City, N. Y., December 4: Copper—Steady; electrolytic spot and future, 8c. Tin—Barely, steady; spot and nearby, $52.62; future, $53.12. Iron—Steady; No. 2, f.o.b. eastern Pennsylvania, $18.50; Buffalo, $17.50; Alabama, $13.50. Lead—Firm; spot New York, 4.15c; East St. Louis, 4.05c. Zinc—Quiet; East St. Louis spot and future, 4.50c. Antimony—Spot—7.25c. Quicksilver—$68.00@69.00.

Kellogg Magneto Switchboard Purchased for Yorkville, Tenn.

The Yorkville Telephone Co., Yorkville, Gibson County, Tenn., recently purchased a Kellogg 150-line magneto switchboard. The new switchboard employs late methods of magneto operation and assures Yorkville subscribers of reliable and fast magneto service.

I. C. Pipkin, president of the Yorkville Telephone Co., expects to have the new equipment in operation in the near future.

New Wire for High Quality Grids Radio Tubes.

Kemet Laboratories Co., Inc., 30 East 42nd Street, New York City, N. Y., a unit of Union Carbide & Carbon Corp., has developed and is manufacturing and selling a new wire for use in radio tubes.

The new wire is an alloy of molybdenum, iron and nickel, approximately 20 per cent Mo, 20 per cent Fe, and the balance largely nickel. It has good strength and ductility at ordinary temperature (tensile strength about 140,000 lbs. per sq. in., and elongation about 28-30 per cent), has good winding qualities and is characterized by exceptionally high strength and stiffness at elevated temperatures.

The tensile strength at 800 deg. C. (1,472 deg. F.) is approximately 60,000 lbs. per sq. in. and the stiffness is said to be comparable to that of pure molybdenum. The unique chemical and physical properties of

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the wire is claimed to make possible the manufacture from it, by conventional methods, of high-quality grids for certain types of radio receiving tubes at lower cost than from other material.

An Additional Source of Income Often Overlooked by Companies.

The chief engineer of the Webster Co., Chicago, manufacturer of sound-amplifying and public address equipment, recently discussed that kind of equipment in its relation to Independent telephone companies.

From a survey of the Independent telephone field and the amount of sound-amplifying and public address equipment sold, he is of the opinion that the local Independent telephone companies with their trained operating staff and local prestige have the ideal set-up for handling, renting, servicing, or even selling such equipment, and that this field represents an important source of additional income for the local operating units.

Here is a typical example of what can be accomplished in this work: A medium-sized Middle West community was planning a "Homecoming" celebration. The committee on entertainment was fortunate in securing as the main speaker and guest of honor an "old town boy" who had been away from his hometown for years and during that period had established himself as a figure of national importance.

The committee chairman, realizing that the largest hall in the town would not hold all the crowd who would come to hear this speaker, influenced his committee to plan on a large outdoor gathering in the city park where facilities were ample for holding the crowd and where the terrain formed a sort of natural amphitheatre.

In looking over the site of this outdoor theatre, the question at once arose as to whether or not the voice of the speaker could be made audible to all who would be present. The committee turned naturally enough to the organization recognized as the local authority on communication and sound transmission—the local telephone company. The manager was consulted and his engineer suggested setting up a simple portable amplification system.

Delivery Truck Equipped with Loudspeaker Equipment

This agreed to, he got in touch with the manufacturer, giving complete data as to size of the outdoor auditorium, probable attendance, lighting and wiring facilities, etc. The manufacturer's engineers studied the layout and after considering the job to be accomplished, shipped a Webster model K portable amplifier complete with five loudspeakers, including pickup microphone, directions for hook-up and suggestions for locating the loudspeakers for best results.

The installation operated with great satisfaction to all. Since that time this same portable amplifier has been in service on many indoor and outdoor jobs. As the telephone company is getting both a rental and installation fee on such assignments, the unit is showing a good profit.

This is only one example of how a local telephone company can cash in on the increasing use of public address and sound-amplifying equipment. Many other examples could be given—for instance, the use of a permanently-equipped sound truck to handle public address work where electric line service is not available. With a truck thus equipped considerable time can be saved in transportation and setting up for public address work.

A light panel body delivery truck is generally used from which the sound is broadcast directly to the audience by means of a loudspeaker located on top or built into sides of the truck. The actual amplifying equipment is mounted in the body of the truck and permanently wired to loudspeakers. The microphone is located at the speaker's stand and microphone control leads are extended to the truck, being plugged into sockets which terminate on microphone input.

Sound trucks thus equipped are adaptable to a number of purposes and can be used to cover practically any kind of outdoor meeting, picnic, fair, sporting event and the like. They are being used more and more for "spot" broadcasting and local advertising where the truck is driven around the streets and advertising propaganda broadcast. In most cases, sound trucks have a microphone and phonograph turntable arrangement which makes possible alternate broadcasting of speech and music.

It stands to reason that the logical source of supply for all such equipment is the local telephone companies. They have the experience and facilities to properly handle it and, with the public confidence they inspire, should find business coming to them—at a good profit.

Up to this point the market for movable or portable types of sound amplifying equipment has chiefly been considered. The fact is that there were several calls for equipment for permanent installations also; installations of panel equipment to serve theatres or schools for education and recreation, emergency and fire drill instructions. Also it is pointed out that factories are readily interested in saving time and increasing efficiency by installing oral-announcing and call systems.

Theatres, churches, funeral parlors and concert halls need to be so equipped as to make the voice of the softest speaker reach the farthest corner in any desired volume. This means opportunity to sell sound-amplifying equipment of suitable type. Paging and announcing systems can be sold also to hotels, restaurants, stores, clubs, etc.

Many outdoor dance pavilions, ball parks, stadiums, roller-skating rinks, convention halls, etc., can be interested in increasing their following and popularity and even serve "overflow" audiences. Some hotels, apartment houses and hospitals are prospects for a form of sound-amplifying equipment to provide guests with programs direct to each room. Such systems are served by one central amplifier or groups of amplifiers and channels furnishing one source of power.

More and more, it is believed, telephone companies will add the servicing and installation of public address and sound amplification systems to their present list of services. As previously stated, they are the logical choice to handle such work. It offers additional income without adding to present operating expense, as all public address and sound amplifying work can be handled with the present operating staff.

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